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Division of Air Quality Control

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

DIVISION OF AIR QUALITY CONTROL

1985

AIR QUALITY DATA REPORT

ONE WINTER STREET - 8TH FLOOR
BOSTON, MASSACHUSETTS 02108

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1985 AIR QUALITY REPORT

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I. INTRODUCTION

This report presents 1985 annual air quality data for Massachusetts, collected by the Division of Air Quality Control (DAQC), Department of Environmental Quality Engineering (DEQE). Data collected by the Commonwealth is also submitted to the U.S. Environmental Protection Agency (EPA) for inclusion into the National Aeromatic Data Bank. DAQC is responsible for measuring ambient air quality to verify compliance with state and national standards (see Table 1), to support development of regulations designed to reduce ambient air contaminants, to assess the effectiveness of existing air pollution control strategies, and to fulfill EPA reporting requirements (40 CFR 50) for air quality data. Table 2 gives a brief description of the health and welfare effects of the six criteria air pollutants.

The continuous and non-continuous air monitoring stations, both urban and rural, are located throughout the state of Massachusetts. The stations are equipped with air pollution monitoring equipment (see Table 3) and, in some cases, meteorological equipment. The continuous state air pollution monitors record hourly levels of gaseous pollutants - ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2). The non-continuous monitors record 24 hour total suspended particulates (TSP), and lead (Pb). Meteorological parameters measured, in most instances, include wind speed, wind direction, and temperature. The Commonwealth's ambient air monitoring network is complemented by a private network of monitors. This private network is limited to monitoring sulfur dioxide, sulfates (SO_4), total suspended particulates, wind-speed, wind direction and temperature.

Figures 2, 3, 5, 6, 7, 8 and 10 illustrate the Commonwealth's air pollution control regions and public monitoring network maintained by DAQC in 1985 for the six criteria pollutants. Figures 4, 9 and 12 illustrate the private monitoring network in 1985 for SO₂, SO₄, and TSP.

This year, DAQC collected a total of 501,915 hourly samples at the public sites and 432,197 hourly samples at the private sites, for a total of 934,112 (see Figure 1). Daily Pollutant Standard Index values (April-October) were also calculated for the Eastern, Central and Western portion of the state.

The Commonwealth's data from public and private monitors have been summarized in this report for public record and information. For further information pertaining to this report and other related air quality problems, please contact either the Division of Air Quality Control at Boston (617) 292-5630 or the Regional Offices.

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FIGURE 1:

SAMPLES FOR MONITORING SITES 1985

PUBLIC AND PRIVATE

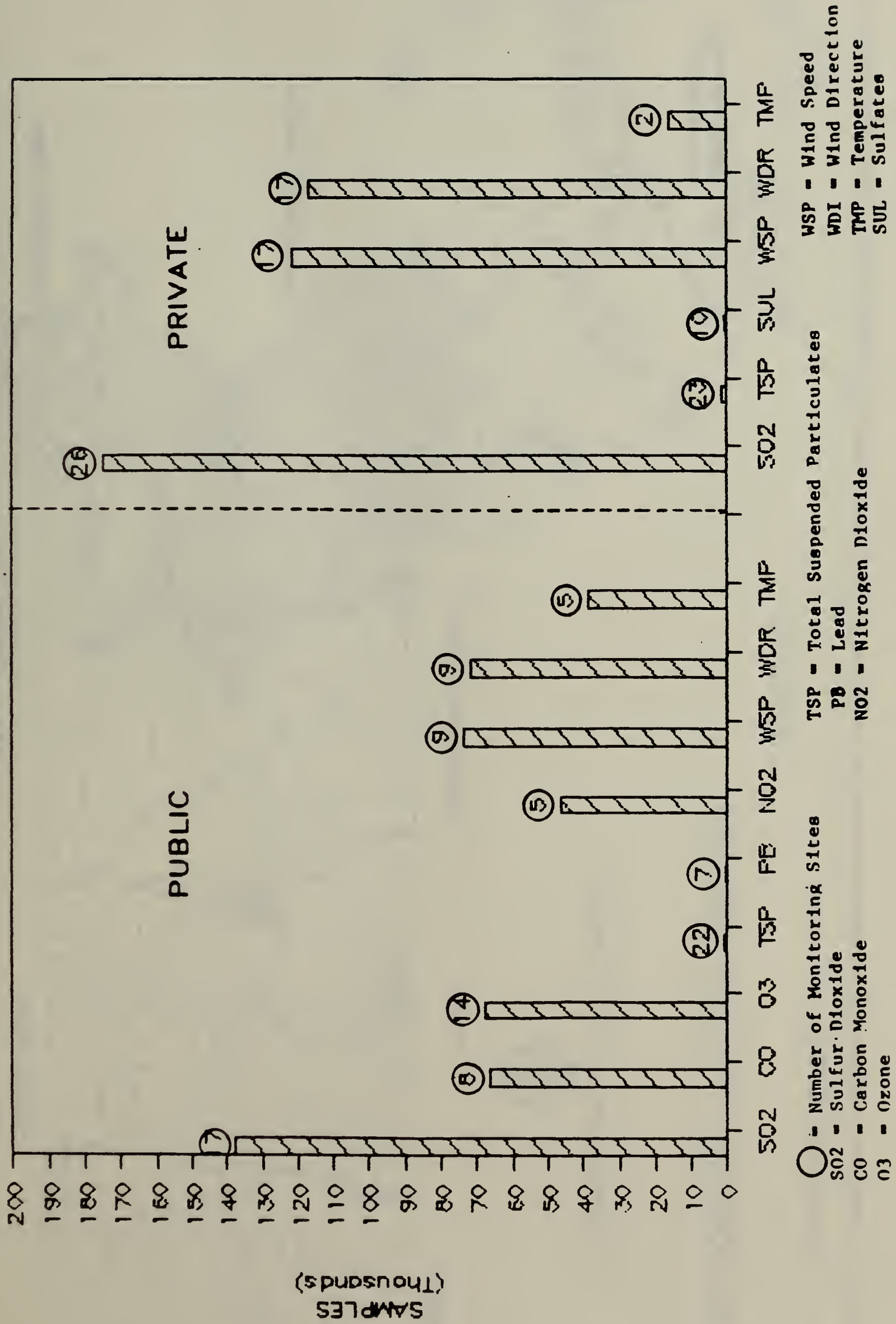


FIGURE 2: AIR POLLUTION CONTROL REGIONS

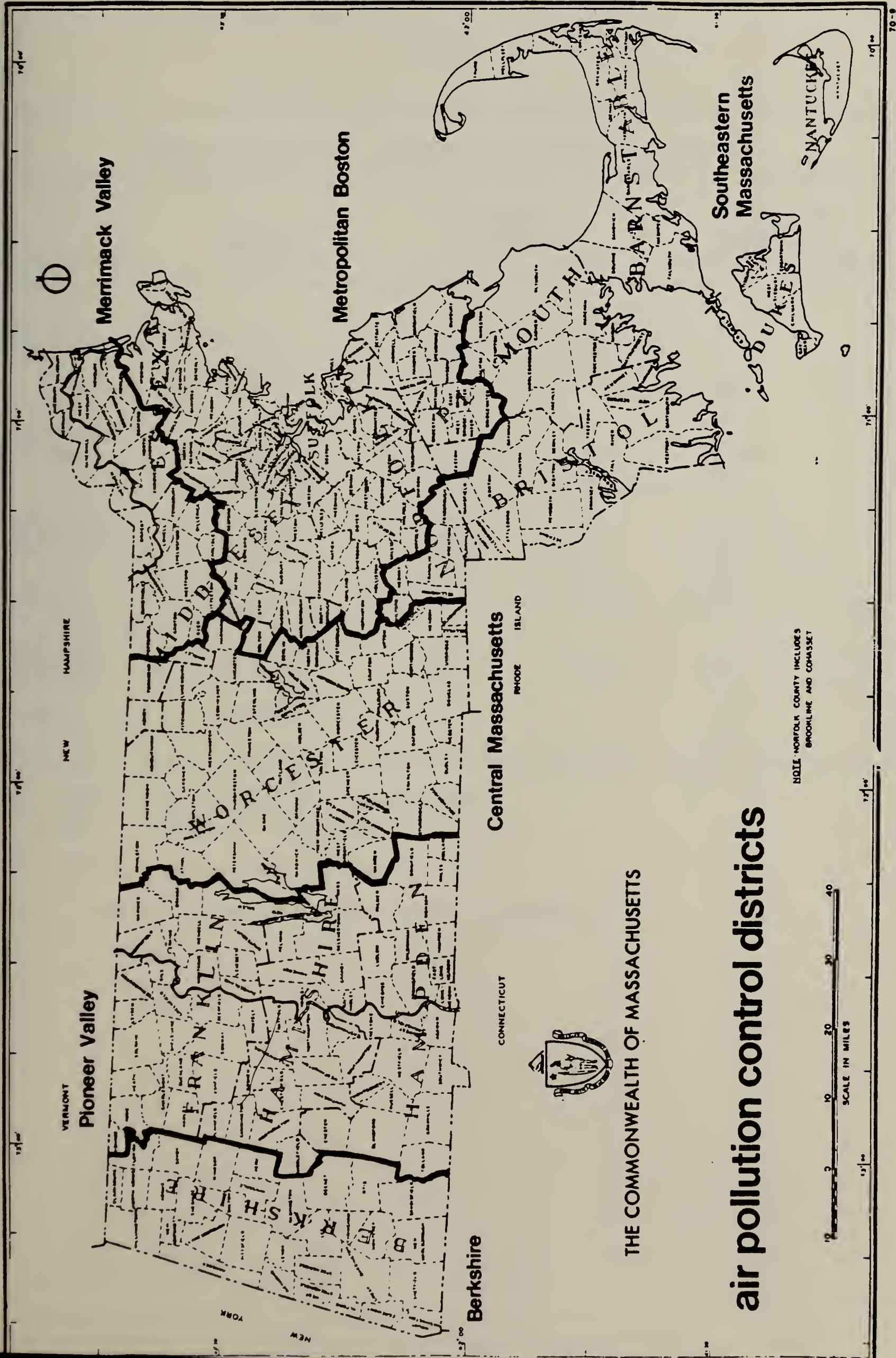


TABLE 1

STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS					
POLLUTANT	AVERAGING INTERVAL	PRIMARY STANDARD		SECONDARY STANDARD	
		ug/m ³	ppm	ug/m ³	ppm
Sulfur Dioxide	Annual	80	0.03	-	-
	24 hour	365	0.14	-	-
	3 hour	-	-	1,300	0.5
Particulate Matter	Annual	75	-	60**	-
	24 hour	260	-	150	-
Carbon Monoxide	8 hour	10*	9	10*	9
	1 hour	40*	35	40*	35
Ozone	1 hour	240	0.12	240	0.12
Nitrogen Dioxide	Annual	100	0.05	100	0.05
Lead	3 month	1.5	-	1.5	-

ug/m³ - micrograms per cubic meter
 ppm - parts per million

*mg/m³ - milligrams per cubic meter

** annual average is considered a guideline

TABLE 2
HEALTH AND WELFARE EFFECTS OF AIR POLLUTANTS

POLLUTANTS AND THEIR SOURCES	HEALTH EFFECTS	WELFARE EFFECTS
<u>Ozone</u> Product of reactions of motor vehicle exhaust, industrial process emissions and other fossil fuel combustion emissions in the presence of sunlight.	Causes breathing difficulty, especially when exercising, irritates eyes, respiratory infections. Acute exposures cause bronchoconstriction, lung edema and abnormal lung development.	Toxic to plants by causing both leaf damage and a decrease in growth. Can weaken materials such as rubber and fabrics.
<u>Total Suspended Particulates</u> Fossil fuel combustion emissions, industrial process emissions, motor vehicle exhaust, traffic movement over dusty roads.	Critical for those with chronic lung diseases, can alter the lungs' natural cleansing mechanism. They are composed of or adhere to toxic materials.	Cause soiling of materials, are corrosive and can damage buildings. Causes haze which reduces visibility and the amount of solar energy reaching the earth.
<u>Carbon Monoxide</u> Internal combustion engines, fossil fuel combustion, and cigarette smoking.	Reduces the blood's ability to carry oxygen which may cause heart and brain damage. Acute exposures can cause asphyxiation.	No known effect on materials or vegetation.
<u>Sulfur Dioxide</u> Fossil fuel combustion emissions.	Irritation of throat and lungs and aggravation of symptoms among those with chronic lung diseases such as asthma and bronchitis.	Corrosion and deterioration of metals, brittleness of paper, discoloration of paint and deterioration of fabric. Causes leaf damage to some plants.
<u>Nitrogen Dioxide</u> Emitted from motor vehicles and fossil fuel burning operations.	Aggravation of symptoms in those with asthma and chronic bronchitis and increased susceptibility to respiratory infections	Fading of dyes, yellowing of leaves on plants, and changing the horizon to a reddish brown color.
<u>Lead</u> Emitted from motor vehicle exhausts and smelters.	Mental retardation, brain and other organ damage.	No direct impact on vegetation.

TABLE 3

ANALYSIS COLLECTION METHOD LISTING*

Sulfur Dioxide:

- 14 Coulometric
- 20 Pulse Fluorescent Instrumental

Carbon Monoxide:

- 11 Non-Dispersive Infra-Red Instrumental

Ozone:

- 11 Chemiluminescence Instrumental
- 14 Ultraviolet Photometric

Nitrogen Dioxide:

- 14 Chemiluminescence Instrumental

Total Suspended Particulates:

- 92 High Volume Air Sampler

Lead:

- 92 High Volume Air Sampler

Sulfate:

- 91 High Volume Air Sampler

* Corresponds to Instrument Method in Data Summaries.

TABLE 4 LIST OF EXCEEDANCES - PUBLIC SITES 1985

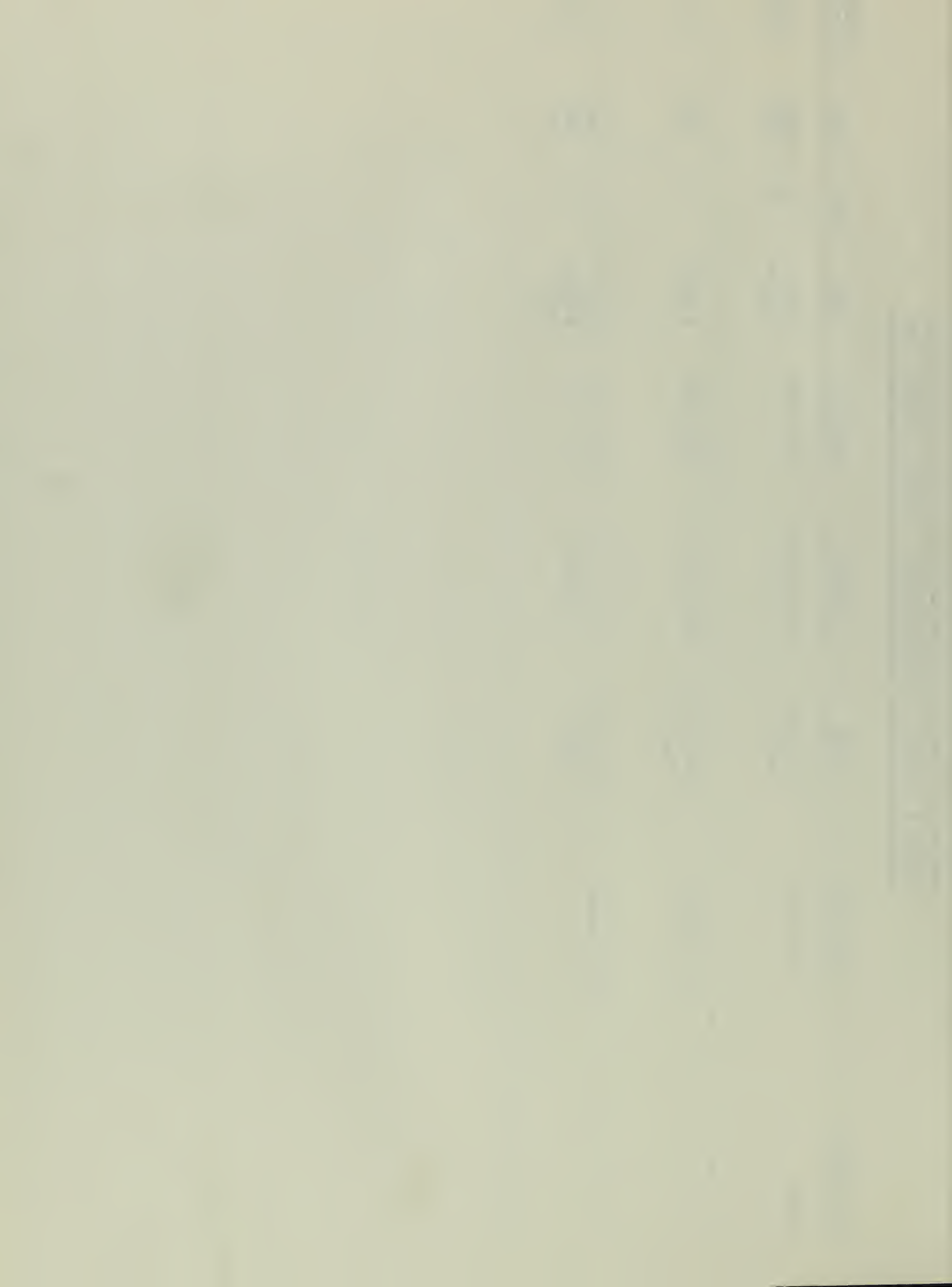
POLLUTANT	LOCATION	AQCR	ADDRESS	SAROAD	MO.	DAY	TIME	LEVEL REACHED
CARBON MONOXIDE								
(3 Hour Average)	NO EXCEEDANCES	RECORDED						
(1 Hour Average)	NO EXCEEDANCES	RECORDED						
NITROGEN DIOXIDE (Annual)								
LEAD (Quarterly)								
TSP (Annual)								
(24 Hour Average)	PRIMARY Charlestown Met. Boston SECONDRARY EXCEEDANCE Charlestown Met. Boston	EXCEEDANCE One City Sq. EXCEEDANCE One City Sq.	0240-027	RECORDED	April	25		81 ug/M ³
SO ₂ (Annual)								
(24 Hour Average)	NO EXCEEDANCES	RECORDED						
(3 Hour Average)	NO EXCEEDANCES	RECORDED						
OZONE								
	Agawam	Pioneer Valley	152 Westfield	0030-003	April	21	1600	.125
					May	11	1800	.132
					May	13	1700	.125
					August	15	1800	.133
	Amherst	Pioneer Valley	Solar Habitat Exp House	0060-002	August	15	1900	.127
	Chicopee	Pioneer Valley	Anderson Rd Westover AFB	0400-008	May	11	1800	.148
					May	13	1700	.130
					July	09	1900	.137
					July	19	1900	.130
					August	10	1500	.128
					August	15	1900	.198
	Ware	Pioneer Valley	Ware High School	2360-001	May	11	1800	.126
					August	15	1800	.163

TABLE 4 LIST OF EXCEEDANCES - PUBLIC SITES 1985

POLLUTANT	LOCATION	AQCR	ADDRESS	SAROAD	MO.	DAY	TIME	LEVEL REACHED
	Worcester	Central Mass.	DPW Yard Belmont Ave.	2640-019	May	27	1600	.140
					July	09	1900	.132
					August	15	1800	.167
	Chelsea	Met. Boston	Power Horn Hill	0380-003	August	15	1900	.129
	Medfield	Met. Boston	Rt. 27 Hospital N. Meadow St.	1210-001	May	10	1600	.127
					July	19	1900	.136
					August	15	1800	.161
					October	09	1200	.156
	Sudbury	Met. Boston	Waterrow Rd National Wildlife	2196-001	July	19	2000	.135
					August	15	1900	.174
	Newburyport	Merrimack Valley	NWR.HQ Plum Island	1520-003	May	11	2100	.131
					July	05	1200	.129
					July	13	1500	.132
					August	15	2000	.145
	Lawrence	Merrimack Valley	High Street- Storow Park	1000-005	August	15	1900	.147

TABLE 4 LIST OF EXCEEDANCES - PUBLIC SITES 1985

POLLUTANT	LOCATION	AQCR	ADDRESS	SAROAD	MO.	DAY	TIME	LEVEL REACHED
OZONE	Attleboro	Southeast Mass.	532 Newport Ave.	0120-004	July	09	1800	.133
					August	15	1600	.130
	N. Easton	Southeast Mass.	300 Main St.	0535-001	August	15	1200	.145
	Fairhaven	Southeast Mass.	Leroy Wood School	0570-002	July	30	1600	.137
					August	14	2000	.143
					Sept.	20	1500	.137



II. PUBLIC SITE DIRECTORY - 1995

CITY SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO2	CO	O3	NO2	TSP	Pb
PIONEER VALLEY AIR QUALITY CONTROL REGION (042)										
Agawam 152 South West- field St.	0030-003	<u>592120</u> <u>4559040</u>	3	Rural Agri- culture			X			
Amherst Solar Habitat	0060-002	<u>704310</u> <u>4596060</u>	3	Rural - Agricultural			X			
Chicopee Anderson Rd. Westover	0400-008	<u>701300</u> <u>4574020</u>	3	Suburban - Commercial	X		X			
Holyoke 1 Court Square	0860-007	<u>597430</u> <u>4575170</u>	12	Center City- Commercial					X	
Springfield 1586 E. Columbus	2160-007	<u>699150</u> <u>4563550</u>	6	Center City- Industrial		X				X
Springfield Longhill Ave (Substations)	2160-009	<u>700193</u> <u>4661928</u>	6	Center City- Commercial	X					
Springfield 59 Howard St. School	2160-011	<u>699460</u> <u>4663330</u>	18	Center City- Commercial					X	X
Springfield Fernbank St.	2160-014	<u>707080</u> <u>4568200</u>	4	Suburban - Commercial		X				
Springfield Community Tech.	2160-015	<u>700000</u> <u>4564500</u>	15	Center City- Residential	X			X	X	
Ware Rt. 32 (Ware High School)	2360-001	<u>725850</u> <u>4580900</u>	5	Rural - Near urban			X			
West Springfield Van Deene St.	2475-003	<u>596400</u> <u>4563940</u>	7	Suburban - Commercial					X	

II. PUBLIC SITE DIRECTORY - 1985

CITY SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO ₂	CO	O ₃	NO ₂	TSP	Pb

BERKSHIRE AIR QUALITY CONTROL REGION (117)

Pittsfield Roof of Berkshire Commons	1800-006	<u>543500</u> 4699897	10	Center City Commercial						X
Pittsfield Birchgrove Drive	1800-007	<u>546480</u> 4700620	3	Suburban Commercial	X		X			

CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION (113)

Fitchburg 5 Summer St.	0520-010	<u>271050</u> 4718500	14	Center City Industrial	X					
Warren River St. Region- al High School	2372-001	<u>732000</u> 4677900	5	Rural - Agricultural						X
Worcester 419 Belmont St. Health Dept.	2640-013	<u>272400</u> 4683700	5	Center City Residential						X
Worcester 2 Washington St. YWCA	2640-015	<u>269100</u> 4682200	8	Center City Commercial						X
Worcester Grove St. Voc. Tech. Sch.	2640-018	<u>269100</u> 4683750	9	Center City Commercial						
Worcester DPW Yard, Belmont Ave.	2640-019	<u>272303</u> 4683738	6	Center City Residential	X		X			
Worcester Thomas St. Fire Station	2640-020	<u>269300</u> 4683000	3	Center City Commercial	X	X				
Worcester 26 Salisbury St.	2640-021	<u>2691000</u> 4683550	9	Center City Commercial						X

II. PUBLIC SITE DIRECTORY - 1985

CITY SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO ₂	CO	O ₃	NO ₂	TSP	Pb
METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)										
Boston Kenmore Square 590 Comm. Ave.	0240-002	<u>317100</u> 4690400	3	Center City Commercial	X	X		X		X
Boston Southampton St. Fire HQ	0240-012	<u>329580</u> 4688230	12	Center City Commercial					X	
Boston Kneeland St. Parking Lot	0240-015	<u>330000</u> 4690000	5	Center City	X	X				
Boston 340 Breman St. E. Boston	0240-021	<u>330000</u> 4693550	4	Center City Residential	X	X		X	X	
Boston Washington St.	0240-022	<u>330100</u> 4690750	4	Center City Commercial		X				
Boston 200 Columbus Ave.	0240-024	<u>329400</u> 4690350	5	Center City Commercial					X	X
Boston Deer Island	0240-026	<u>337900</u> 4690200	4	Suburban Residential						
Boston One City Square Charlestown	0240-027	<u>330100</u> 4693030		Center City Residential					X	X
Chelsea Chest. & 6th St.	0380-002	<u>332500</u> 4695100	13	Center City Commercial					X	X
Chelsea Power Horn Hill	0380-003	<u>3399000</u> 46961500	4	Center City Residential	X		X	X	X	
Medfield Rt. 27 N. Meadow State Hospital	1210-001	<u>307200</u> 4675800	7	Rural Commercial	X		X			
Medford 100-120 Main St. Fire Headqtrs.	1220-002	<u>326300</u> 4697990	6	Center City Commercial					X	

II. PUBLIC SITE DIRECTORY - 1985

CITY SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO ₂	CO	O ₃	NO ₂	TSP	Pb

METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119) (Cont.)

Quincy Hancock St., Atlantic Fire Station	1880-007	<u>332400</u> 4582100	3	Suburban Residential						X
Sudbury Watertown Rd. Natl. Wildlife	2196-001	<u>303350</u> 4595100	5	Rural Agricultural			X			
Watertown Victory Field	2380-005	<u>3203100</u> 45935000	4	Center City Residential	X					
Woburn Pleasant St. Court House	2620-002	<u>323000</u> 4705000	12	Suburban Commercial						X

MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)

Lawrence High St. Storrow Park	1000-005	<u>342220</u> 4730590	4	Center City Residential	X		X	X	X	
Lowell 35 YMCA Drive	1080-006	<u>310370</u> 4722540	7	Center City Commercial					X	X
Lowell Old City Hall Merrimack St.	1080-007	<u>310400</u> 4723800	5	Center City Commercial	X	X				
Newburyport NWR H Quarters Plum Island	1520-003	<u>351300</u> 4741600	4	Suburban Residential			X			

SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION (120)

Attleboro 532 Newport Ave.	0120-004	<u>000000</u> 000000	13	Suburban Residential			X			
Easton-North 300 Main St. Post Office	0535-001	<u>327050</u> 4559170	5	Rural Near Urban			X			

II. PUBLIC SITE DIRECTORY - 1985 Con't.

CITY SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO2	CO	O3	NO2	TSP	Pb
SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION (120) (Cont.)										
Fairhaven Leroy Wood School	0570-002	<u>343330</u> 4510800	4	Suburban Residential	X		X			
Fall River 165 Bedford St.	0580-001	<u>321000</u> 4518000	15	Center City Commercial					X	
Fall River Globe St.	0580-004	<u>319700</u> 4516900	5	Center City Commercial	X			X		
New Bedford 234 Earle St.	1500-003	-	14	Center City Commercial						
New Bedford 25 Water St. YMCA	1500-004	<u>3395000</u> 45101100	16	Center City Commercial					X	

II. PRIVATE SITE DIRECTORY - 1935

SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO2	SO4	W/S	W/D	TSP	Temp
PIONEER VALLEY AIR QUALITY CONTROL REGION										
Chicopee Grattan & Meadow	0400-006	<u>697069</u> 4672615	5	Suburban		X			X	
Erving Route 2 North	0540-001	<u>714600</u> 4719810	3	Rural	X					
Erving Route 2 N. East	0540-002	<u>715020</u> 4720030	3	Rural Industrial	X					
Erving Route 2 Fire Station	0540-003	<u>715020</u> 4720030	8	Rural	X					
Erving Rt. 2 West	0540-004	<u>714500</u> 4719240	16	Rural			X	X		
Hadley Summit Hse, Mt. Holyoke	0789-002	<u>629160</u> 4685971	5	Rural	X		X			
Holyoke Mt. Tom Power Plant	0860-005	<u>697554</u> 4683012	3	Rural	X		X	X	X	
Holyoke Goat Pk. Mt. Tom Reserva- tion	0860-009	<u>695400</u> 4682500	5	Suburban			X			
Holyoke Chmura Pool, Anniversary Park	0860-010	<u>697200</u> 4675530	3	Center City	X		X	X		
Northampton Elm St. Smith College	1600-003	<u>694660</u> 4637790	11	Center City		X			X	

II. PRIVATE SITE DIRECTORY - 1985

SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
					SO ₂	SO ₄	W/S	W/D	TSP	Temp

PIONEER VALLEY AIR QUALITY CONTROL REGION (Cont.)

South Hadley Pine St. Sub- Station	2126-002	<u>599012</u> 4679587	3	Suburban	X					
South Hadley 23 Granview Street	2126-003	<u>599400</u> 4675600	3	Suburban	X		X	X		
Springfield Longhill Sub- Station	2160-009	<u>700193</u> 4661928	6	Center City	X	X			X	
Springfield Carew St. Sub-Station	2160-010	<u>699855</u> 4666415	4	Suburban	X					
Springfield Civic Center Rooftop	2160-012	<u>699462</u> 4663692	21	Center City		X			X	
Springfield Rose St. & Page Blvd.	2160-013	<u>702346</u> 46683460	5	Center City		X			X	
W. Springfield Agawam Ave. Base Station	2475-004	<u>723554</u> 4205400	5	Center City	X					
W. Springfield Agawam Ave.	2475-005	<u>699100</u> 4662300	5	Center City	X					
W. Springfield Agawam Ave.	2475-006	<u>699100</u> 4662750	5	Center City	X					

CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION

Fitchburg 5 Summit St.	0620-010	<u>271000</u> 4717230	18	Center City			X	X		
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II. PRIVATE SITE DIRECTORY - 1985

SITE LOCATION	SAROAD #	UTM COORD EAST NORTH	REC HGT (M)	STATION TYPE	POLLUTANTS					
					SAMPLED					
					SO2	SO4	W/S	W/D	TSP	Temp
METROPOLITAN BOSTON AIR QUALITY CONTROL REGION										
Beverly E. Lothrop St. Central Cemetery	0220-002	<u>346600</u> 4712400	3	Center City	X					X
Boston 476 Atlantic Ave.	0240-018	<u>330760</u> 4690790	3	Center City	X	X				X
Boston Long Island	0240-019	<u>337595</u> 4686595	5	Rural	X	X	X	X		X
Boston Dewar St. Dorchester	0240-020	<u>330548</u> 4685952	6	Center City	X	X	X	X		X
Boston Bremar St. E. Boston	0240-021	<u>332696</u> 4593440	3	Center City	X	X	X	X		X
Danvers 154 Andover St.	0480-003	<u>338200</u> 4713300	-	Suburban	X		X	X		X
Lynn 436 Lynnway St. GECO	1100-003	<u>339171</u> 4701453	-	Center City	X		X	X		X
Marblehead Green St.	1160-003	<u>347395</u> 4707922	3	Suburban						X
Peabody Meadow Pond - Glen Rd.	1730-004	<u>341340</u> 4708630	3	Suburban			X	X		
Peabody X Hill - Perkins St. Playground	1730-005	<u>341130</u> 4709640	3	Suburban			X	X		
Salem Fort Ave. Power Transm. Lines NEPC	1930-004	<u>345900</u> 4710100	3	Suburban			X	X	X	X
Salem Fort Ave. Cart Cove Marine Lab	1930-005	<u>346250</u> 4710000	3	Suburban	X					X

II. PRIVATE SITE DIRECTORY - 1985

SITE LOCATION	SAROAD #	UTM COORD		REC HGT (M)	STATION TYPE	POLLUTANTS SAMPLED					
		EAST	NORTH			SO ₂	SO ₄	W/S	W/D	TSP	Temp
METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (Cont.)											
Salem Derby St.	1980-006	-		3	Suburban						X
Sherbon Perry St. Power Lines	2042-001	<u>302200</u> 4681200		2	Rural	X	X				X
Stoneham Hill St. Hillside Garden Apts.	2180-001	<u>326462</u> 4704385		12	Suburban	X		X	X		
Wellesley Whitin Obs. Wellesley College	2420-001	<u>310150</u> 4684730		4	Suburban	X					X

SOUTHEAST MASSACHUSETTS AIR QUALITY CONTROL REGION

Fall River Highland Ave.	0580-012	323330 4622795		4	Suburban			X	X		
Fall River Highland Ave. Truesdale Hospital	0580-013	322415 4621574		8	Suburban	X		X	X	X	
Fall River	0580-014	320020 4617400		30	Urban				X	X	
Fall River Stanley St.	0580-036	322250 4620050		4	Center City					X	
Swansea Sharp Lots Road	2230-001	317300 4624600		3	Suburban			X	X	X	X

MERRIMACK VALLEY AIR QUALITY CONTROL REGION

Haverhill Borman St. Nettle School	0840-002	-		-	-	X					
Pepperell 12 Bennet St.	1792-001	293354 4725275		3	Rural			X	X		

III. SAMPLING RESULTS FOR AIR QUALITY DATA

A. Sulfur Dioxide (SO₂)

1. Sampling Method

The instrumental method used to analyze continuous SO₂ concentrations is pulse fluorescent. In the pulse fluorescent method, SO₂ molecules are excited by ultra-violet light. In the process, the molecules emit distinctive light waves which vary in intensity according to the SO₂ concentration. The intensity is then measured to find specific SO₂ concentrations. The sampling method meets EPA equivalency requirements in Part 50, 40 CFR, July 1, 1981.

2. Summary of Data

In 1985, there were 17 state-operated SO₂ monitors (Figure 3). All of these sites operated at 86 percent or greater data capture. There were no recorded violations of the National Ambient Air Quality Standards (NAAQS) for SO₂ in 1985. Table 5 shows that the highest annual average (34 ug/M³) was in the Metropolitan Boston urban area (0240-002, 0240-015). There were 26 privately-operated SO₂ monitors for 1985 (Figure 4). Eighteen of these sites operated at 75 percent data capture or greater. There were no recorded violations of the NAAQS. Table 6 shows that the highest annual average (37 ug/M³) was in the Springfield area (2160-009, 2160-010).

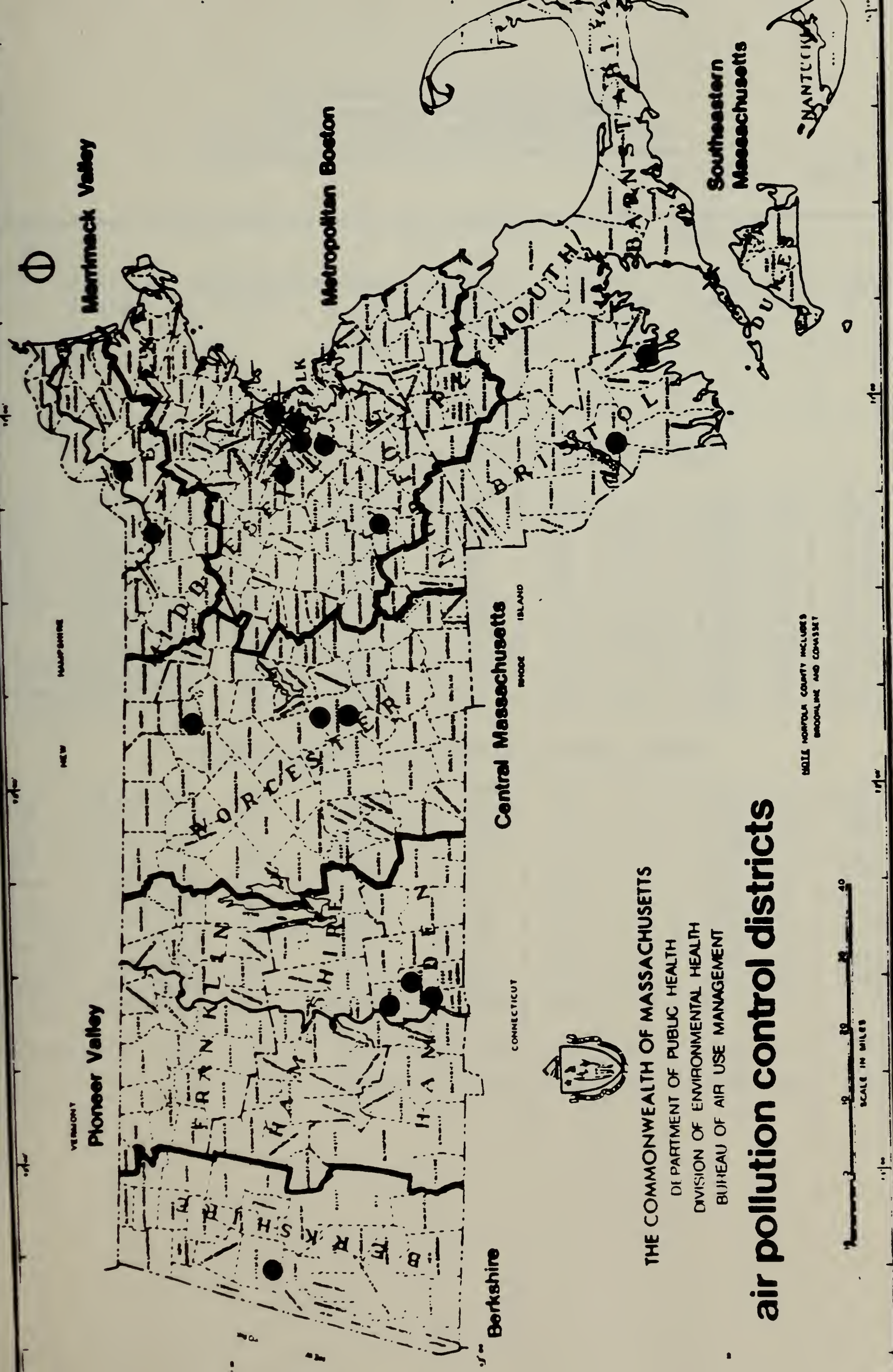
(3) TABLE 5 - PUBLIC SITES
1985 SULFUR DIOXIDE MONITORING RESULTS

SO₂ units: ug/m³

Daily										
City	Saroad Site#	Instru- ment Method	Number of Hourly obs.	Annual Arith. Mean	Maximum 24 hr. obs Block		Maximum 3 Hr obs Block		Maximum 1Hr obs Block	
					1st	2nd	1st	2nd	1st	2nd
BERKSHIRE AIR QUALITY CONTROL REGION										
Pitts- field	1300-007	20	7791	24	112	38	239	236	399	317
CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION										
Fitchburg	0520-010	20	8272	21	96	86	189	182	270	249
Worcester	2540-019	20	8475	18	76	73	154	142	184	163
Worcester	2540-020	20	8336	26	124	110	274	219	336	323
MERRIMACK VALLEY AIR QUALITY CONTROL REGION										
Lawrence	1000-005	20	8414	31	95	93	338	178	446	372
Lowell	1030-007	20	7741	20	71	67	174	128	212	199
METROPOLITAN BOSTON AIR QUALITY CONTROL REGION										
Boston	0240-002	20	7564	34	139	123	229	228	364	317
Boston	0240-015	20	8306	34	129	118	199	194	247	233
Boston	0240-021	20	8189	26	135	128	315	303	653	514
Chelsea	0380-003	20	8169	29	130	119	212	207	585	490
Medfield	1210-001	20	7977	12	60	57	134	121	173	142
Watertown	2380-005	20	8039	20	103	91	184	178	212	192
PIONEER VALLEY AIR QUALITY CONTROL REGION										
Chicopee	0400-008	20	8056	19	100	91	197	160	275	265
Sprnfld.	2150-009	20	8127	30	143	142	232	229	323	286
Sprnfld.	2150-015	20	7943	25	155	117	227	217	238	233
SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION										
Fairhaven	0570-002	20	8024	17	80	67	179	169	247	239
Fall River	0530-004	20	8015	24	128	112	307	222	440	391

- * Sulfur dioxide data are collected throughout the year; 100 percent data capture during this period represents 8,760 hourly observations.
- ** When total observations are less than 6,250, sample size is insufficient to represent sound data results for the year.

FIGURE 3: Continuous Air Sampling Network Sulfur Dioxide - 1985 - Public Sites



(5) TABLE 6 - PRIVATE SITES

1985 SULFUR DIOXIDE MONITORING RESULTS

SO₂ units: ug/m³

City	Saroad Site#	Instrument Method	Number of Hourly obs.	Annual Arith. Mean	Daily					
					Maximum 24 hr. obs. Running		Maximum 3 Hr. obs. Running		Maximum 1 Hr. obs.	
					1st	2nd	1st.	2nd.	1st.	2nd.
METROPOLITAN BOSTON AIR QUALITY CONTROL REGION										
Beverly	0220-002	20	8653	17	76	71	147	134	165	162
Boston	0240-018	20	8601	34	149	139	246	228	348	267
Boston	0240-019	20	8528	21	134	102	246	231	346	254
Boston	0240-020	20	8608	26	162	136	254	241	283	265
Boston	0240-021	20	8176	31	155	144	262	262	509	328
Danvers	0480-003	20	8680	18	89	84	352	267	556	383
Lynn	1100-003	91	7375	18	178	136	417	388	1085	530
Salem	1980-005	16	3805**	18*	110	102	194	165	212	212
Sherborn	2042-001	13	8035	18	76	71	147	134	207	192
Stoneham	2180-001	20	8361	31	139	136	257	249	495	343
Wellesley	2420-001	20	8065	21	181	176	238	231	288	273
PIONEER VALLEY AIR QUALITY CONTROL REGION										
Erving	0540-001	20	5349**	29*	100	79	241	223	354	265
Erving	0540-002	20	4830**	26*	123	100	432	325	605	592
Erving	0540-003	20	5433**	16*	63	58	141	136	212	205
Hadley	0789-002	20	7203	31	123	113	304	278	655	561
Holyoke	0860-005	20	7301	24	84	79	228	160	268	260
Holyoke	0860-010	20	8716	24	359	126	233	233	317	275
S. Hadley	2126-002	20	7049	34	107	102	286	267	548	422
S. Hadley	2126-003	20	8379	13	84	73	176	147	249	199
Springfld	2160-009	20	7538	37	136	131	228	223	422	283
Springfld	2160-010	20	7571	37	155	155	333	225	527	375
W.Spring- field	2475-004	20	2794**	39*	144	113	233	217	328	260
W.Spring- field	2475-005	20	2857**	39*	149	113	233	231	312	273
W.Spring- field	2475-006	20	2845**	37*	149	139	301	288	356	341

(5) TABLE 6 - PRIVATE SITES (Cont.)
1985 SULFUR DIOXIDE MONITORING RESULTS

SO₂ units: ug/m³

City	Saroad Site#	Instrument Method	Number of Hourly obs.	Annual Arith. Mean	Daily					
					24 Hr. obs.		3 Hr. obs.		1 Hr. obs.	
					Running		Running		Running	
					1st	2nd	1st.	2nd.	1st.	2nd.

MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)

Haverhill	0840-002	20	2196**	47*	388	288	865	755	896	878
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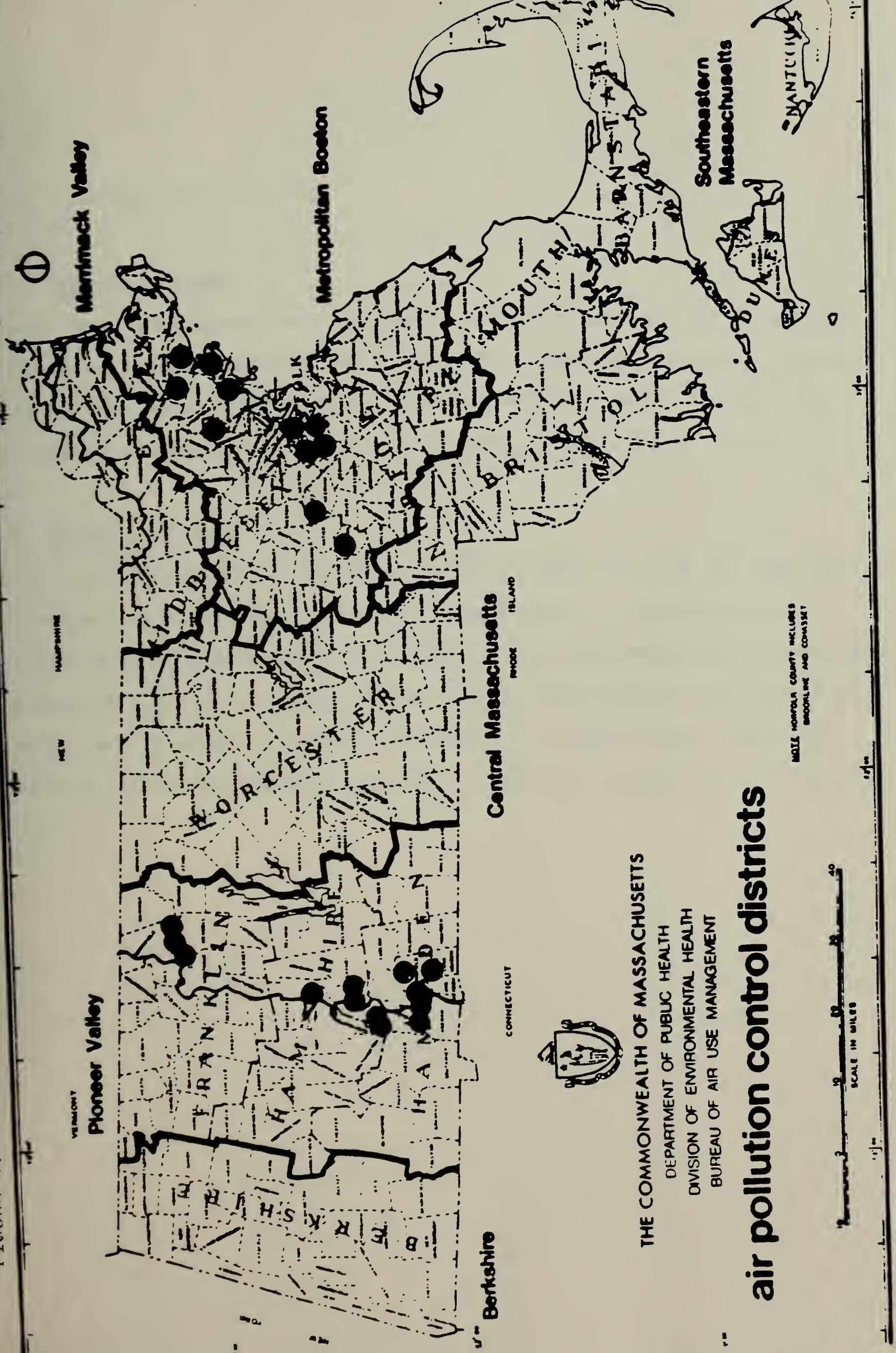
SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION (120)

Fall River	0580-013	20	7806	26	162	155	293	254	451	411
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* Annual Arithmetic Mean based on less than 75% data capture.

** When total observations are less than 6,250, sample size is insufficient to represent sound data results for the year. Sulfur dioxide data are collected throughout the year; 100 percent data capture during this period represents 8,760 hourly observations.

FIGURE 4: Continuous Air Sampling Network Sulfur Dioxide - 1985 - Private Sites



B. CARBON MONOXIDE (CO)

1. Sampling Method

DAQC uses non-dispersive infrared (NDIR) analyzers for CO detection. These analyzers employ a short cell NDIR detection principle coupled with water vapor subtraction. This methodology meets equivalency requirements published by EPA in Part 50, 40 CFR, July 1, 1981.

2. Summary of Data

DAQC operated eight CO monitors in 1985 (Figure 5). All of these sites operated at 34 percent or greater data capture. There were no violations of the one-hour or 3-hour CO National Ambient Air Quality Standards (NAAQS) in 1985. Table 7 shows that the maximum hourly CO value was 32 mg/M³ at Boston (0240-002). Another Boston (0240-022) site recorded the highest eight-hour average concentration (10 mg/M³).

(3) TABLE 7 - PUBLIC SITES

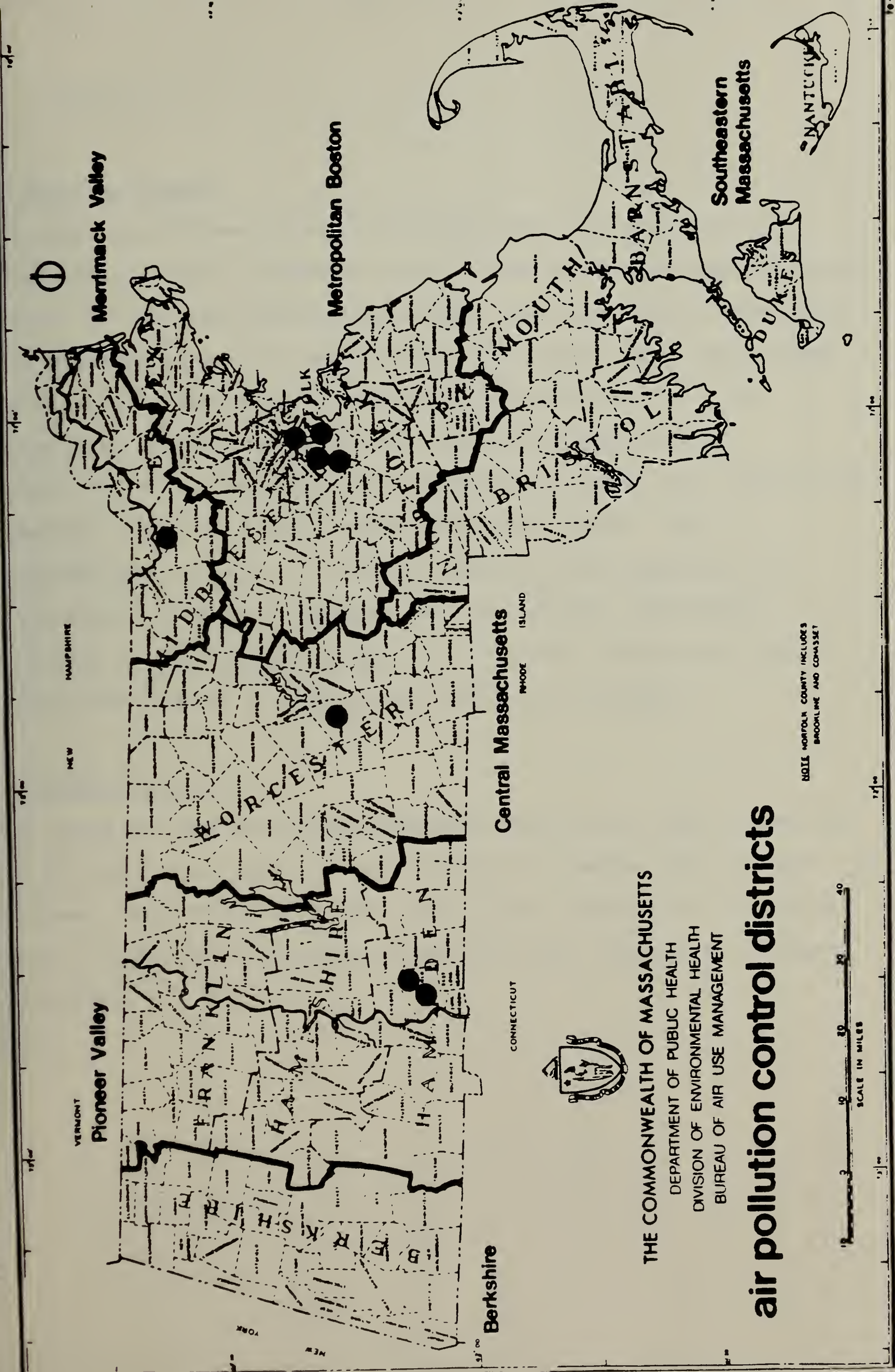
1985 CARBON MONOXIDE MONITORING RESULTS

CO Units: mg/M₃

City	Saroad Site #	Instrument Method	Number of Hourly obs.	Maximum 1st 1hr.	Maximum 2nd 1 hr.	Maximum 1st 8 hr	Maximum 2nd 8 hr	# of 8 hr averages above 10
<u>CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION (118)</u>								
Worcester	2640-020	11	8603	13	13	8	7	0
<u>MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)</u>								
Lowell	1080-007	11	7401	15	14	10	9	0
<u>METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)</u>								
Boston	0240-002	11	8410	13	10	9	7	0
Boston	0240-015	11	8547	8	8	6	5	0
Boston	0240-021	11	8465	29	9	6	6	0
Boston	0240-022	11	8347	17	16	10	9	0
<u>PIONEER VALLEY AIR QUALITY CONTROL REGION (042)</u>								
Springfield	2160-007	11	8272	15	12	9	9	0
Springfield	2160-014	11	8220	8	7	5	5	0

** When total observations are less than 6,570, the sample cannot be guaranteed to contain the actual maximum concentration value for the year. An observation is a single hourly reading at a site. Carbon monoxide data are collected throughout the year; 100 percent data capture during this period represents 8,760 hourly observations.

FIGURE 5: Continuous Air Sampling Network - Carbon Monoxide - 1985 - Public Sites



C. OZONE (O₃)

1. Sampling Method

The chemiluminescence detection principle and the ultraviolet photometric analyzer method are used in the continuous measurement for ozone. In the chemiluminescence method, the ozone reacts chemically with ethylene gas, which emits light. The intensity of the emitted light is proportional to the amount of ambient ozone. In the ultraviolet method, the ultraviolet photometer gauges ozone concentrations by measuring the attenuation of light from ozone in the adsorption cell at a wave length of 254 nanometers. The concentration of ozone is directly related to the magnitude of attenuation. Both methodologies meet equivalency requirements published by EPA Part 50, 40 CFR, July 1, 1981. (The ozone season covers seven months of monitoring from April to October).

2. Summary of Data

DAQC operated fourteen ozone monitoring stations in 1985 (Figure 6). All of these sites operated at 81 percent or greater data capture. At thirteen stations the .125 parts per million standard was exceeded. Table 8 shows that the maximum ozone value was .198 ppm at Chicopee (0400-008).

(3)TABLE 8 - PUBLIC SITES
1985 OZONE MONITORING RESULTS

O₃ units = ppm

City	Saroed Site #	Instrument Method	# of obs.	Maximum 1 Hr. Obs.			Values = > .125 mea- sured for Daily Max
				1st	2nd.	3rd.	

BERKSHIRE AIR POLLUTION CONTROL REGION (117)

Pittsfield	1300-007	11	4388	.119	.113	.101	0
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CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION (118)

Worcester	2640-019	11	4967	.167	.140	.132	3
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METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)

Cnelsea	0380-003	11	7548	.129	.124	.110	1
Medfield	1210-001	11	4164	.161	.156	.136	4
Sudbury	2196-001	11	4497	.174	.135	.114	2

MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)

Lawrence	1000-005	11	4469	.147	.116	.109	1
Newburyport	1520-003	11	5043	.145	.132	.131	4

PIONEER VALLEY AIR QUALITY CONTROL REGION (042)

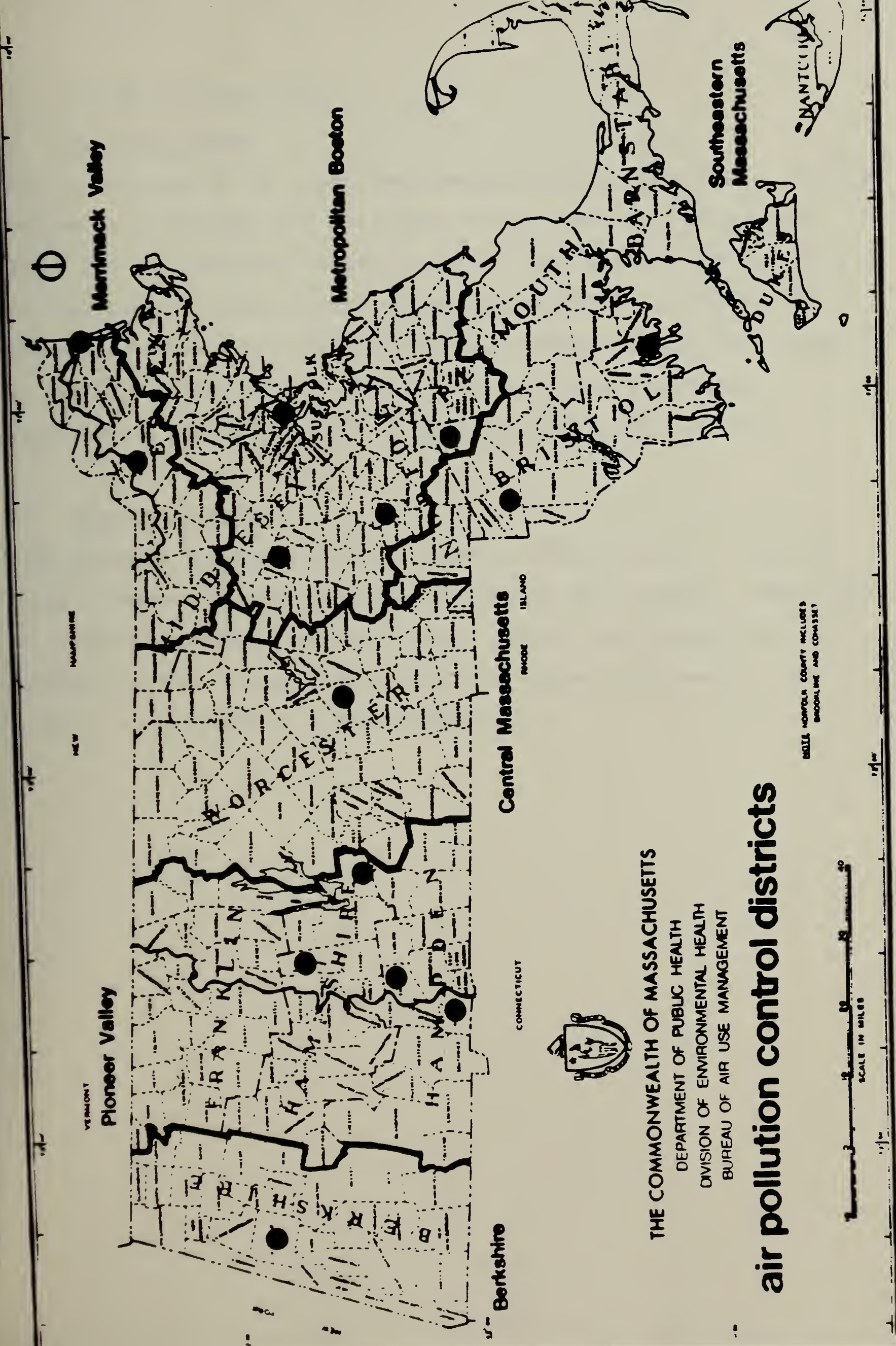
Agawam	0030-003	11	4204	.136	.133	.132	4
Amherst	0060-002	11	4940	.127	.115	.112	1
Chicopee	0400-008	11	6942	.198	.148	.137	6
Ware	2360-001	11	4238	.163	.126	.118	2

SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION (120)

Attleboro	0120-004	11	5004	.139	.130	.111	2
Easton	0535-001	11	4690	.146	.116	.110	1
Fairhaven	0570-002	11	4758	.143	.137	.137	3

** When total observations are less than 3,852, the sample cannot be guaranteed to contain the actual maximum concentration value for the year. An observation is a single hourly reading at a site; 100 percent data capture during the 4/1 to 10/31 ozone season represents 5,136 observations at each monitor.

FIGURE 6: Continuous Air Sampling Network Ozone - 1985 - Public Sites



THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
BUREAU OF AIR USE MANAGEMENT

air pollution control districts

D. NITROGEN DIOXIDE (NO₂)

1. Sampling Method

NO₂ is measured by the chemiluminescence detection principle. In this method, nitric oxide (NO) and oxides of nitrogen (NO_x) react with ozone and the resultant chemical products emit light. The intensity of this light is proportional to the concentrations of NO_x and NO. The electronically calibrated difference between NO_x and NO is equal to the NO₂ concentration. This methodology meets equivalency requirements published by EPA in Part 50, 40 CFR, July 1, 1981.

2. Summary of Data

DAQC operated six NO₂ monitoring sites in 1985 (Figure 7). All of these sites operated at 32 percent or greater data capture. There were no recorded violations of the National Ambient Air Quality Standard (NAAQS) for NO₂. Table 9 shows that the highest NO₂ levels, (301 ug/M³) were recorded in Boston (0240-002).

(3) TABLE 9 - PUBLIC SITES
1985 NITROGEN DIOXIDE MONITORING RESULTS

NO₂ units: ug/M³

City	Saroad Site #	Instrument Method	Number of Hourly obs.	Maximum 1st hour	2nd hour	Annual Arithmetic Mean
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MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)

Lawrence	1000-005	14	8013	156	152	41
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METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)

Boston	0240-002	14	7563	301	228	75
Boston	0240-021	14	7180	213	196	57
Chelsea	0380-003	14	7967	216	184	45

PIONEER VALLEY AIR POLLUTION CONTROL REGION (042)

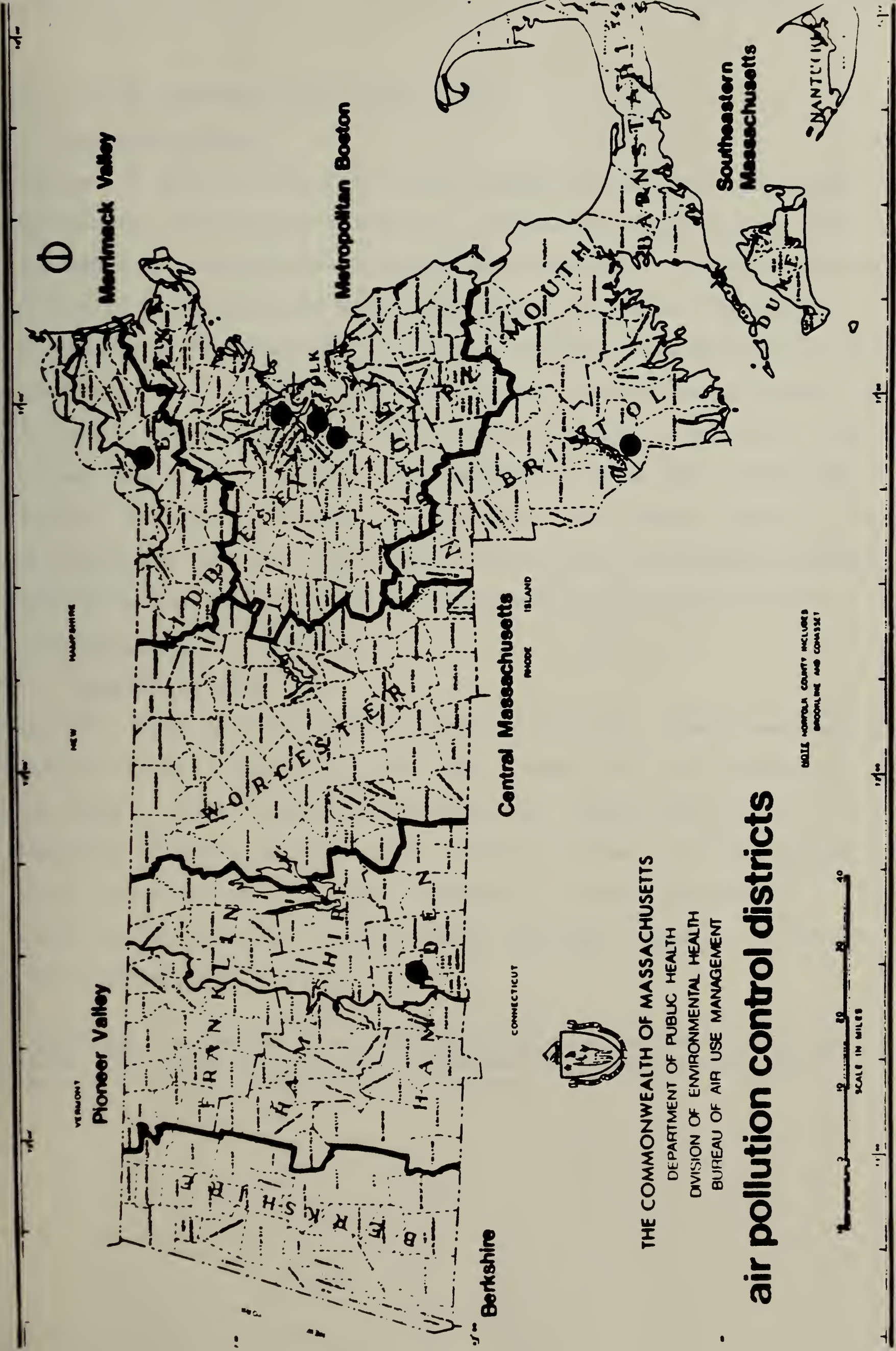
Springfield	2160-015	14	3044	188	179	45
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SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION

Fall River	0580-004	14	7221	124	122	30
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** When total observations are less than 6,570, the sample cannot be guaranteed to contain the actual maximum concentration value for the year. Nitrogen dioxide data are collected throughout the year; 100 percent data capture during this period represents 8,760 hourly observations.

FIGURE 7: Continuous Air Sampling Network Nitrogen Dioxide - 1985 - Public Sites



E. TOTAL SUSPENDED PARTICULATES (TSP)

1. Sampling Method

TSP measurements are routinely taken using the standard high volume air sampler method every sixth day. In this procedure, air is drawn through a pre-weighed 8"x10" fiberglass filter at a rate between 40 to 60 CFM for a period of 24 hours beginning at midnight. At the conclusion of the sampling, the filter is removed and transported to a laboratory for reweighing. The difference in weight in milligrams is divided by the volume of air passed through, giving a weight per unit volume result, i.e., ug/M^3 . Upon completion of the TSP (weight/unit volume) calculation, several other physical and chemical tests can be performed upon the collected sample, such as lead and sulfate content. This methodology meets equivalency requirements published by EPA in Part 50, 40 CFR, July 1, 1981.

2. Summary of Data

In 1985, there were 23 state-operated TSP monitors. Twenty-one had at least 75 percent data capture for 1985. There was one violation of the Annual Primary Standard of the National Ambient Air Quality Standards (NAAQS) for TSP in 1985. Table 10 shows that the highest Annual geometric mean ($31 \text{ ug}/\text{M}^3$) occurred in Boston (0240-027)*. There was one violation of the 24-hour secondary standard, in Boston ($152 \text{ ug}/\text{M}^3$, site 0240-027).

* Although the Chelsea Site (0380-002) had an annual mean above the NAAQS, the sample size was not sufficient to guarantee the actual maximum 24 hour concentration for the year.

There were 23 privately operated TSP monitors in 1985 (Figure 9). There were no violations of the primary annual NAAQS. Nineteen sites had at least 75 percent data capture. Table 11 shows that the highest annual geometric mean (74 ug/M^3) was recorded at Boston (0240-018). There were two violations of the 24-hour secondary standard, one in Northampton on February 18 (152 ug/M^3 , site 1600-003), and one in Springfield on June 12 (152 ug/M^3 , site 2160-012).

(3) TABLE 10 - PUBLIC SITES

1985 TOTAL SUSPENDED PARTICULATES MONITORING RESULTS

TSP Units: ug/M³

City	Saroad Site#	Number of Obs.	Minimum Obs.	1st.	Maximum 2nd.	3rd.	Annual Arith. Mean	An-nual Geo. Mean
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BERKSHIRE AIR QUALITY CONTROL REGION (117)

Pittsfield	1800-006	54	15	115	76	76	45	41
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CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION (118)

Warren	2372-001	56	8	56	51	49	27	24
Worcester	2640-013	55	15	90	87	81	45	42
Worcester	2640-016	58	13	140	139	129	60	53
Worcester	2640-021	49	20	134	79	77	46	43

MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)

Lawrence	1000-005	57	19	97	95	79	47	44
Lowell	1080-006	60	20	153	150	122	60	54

METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)

Boston	0240-012	59	25	96	91	89	58	55
Boston	0240-021	58	22	130	99	99	55	52
Boston	0240-024	43	27	110	100	93	61	57
Boston	0240-027	51	35	160	152	147	87	81
Brockton	0320-003	58	10	98	64	63	38	35
Chelsea	0330-002	10**	21	147	146	125	92*	81*
Chelsea	0330-003	36**	18	91	73	91	41*	38*
Medford	1220-002	57	20	126	89	72	46	43
Quincy	1880-007	55	16	78	69	65	43	40
Woburn	2620-002	43	17	136	95	71	42	38

PIONEER VALLEY AIR QUALITY CONTROL REGION (042)

Holyoke	0860-007	57	18	107	104	102	58	54
Springfield	2160-011	59	18	89	87	87	53	50
Springfield	2160-015	55	16	114	92	88	50	46
W.Springfld	2475-003	59	16	76	75	75	46	43

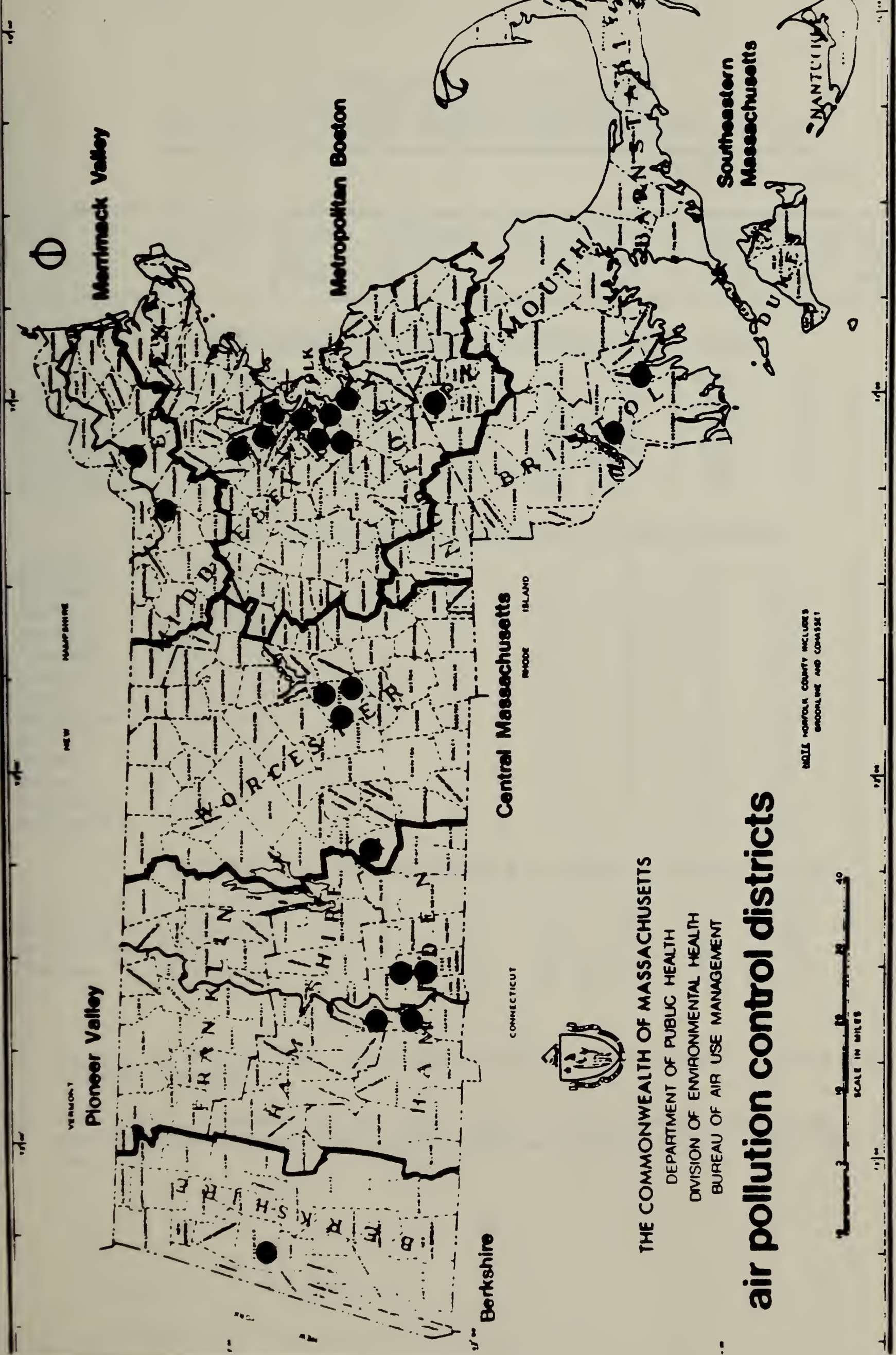
SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION (120)

Fall River	0580-001	57	16	110	100	93	49	45
New Bedford	1500-004	52	17	78	64	62	38	36

* Annual Arithmetic Mean and Annual Geometric Mean could not be determined due to insufficient sample size.

** When total observations are less than 40, the sample cannot be guaranteed to contain the actual maximum concentration value for the year.

FIGURE 8: Air Sampling Network Total Suspended Particulates - 1985 - Public Sites



(5) TABLE 11 - PRIVATE SITES

1985 TOTAL SUSPENDED PARTICULATES MONITORING RESULTS

TSP Units: ug/M³

City	Saroad Site#	Number of Obs.	Minimum Obs.	1st Max Obs.	2nd Max Obs.	3rd Max Obs.	Annual Arith. Mean	Annual Geo. Mean
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PIONEER VALLEY AIR QUALITY CONTROL REGION (042)

Chicopee	0400-006	59	11	176	128	126	63	54
Holyoke	0860-005	8**	17	44	42	40	29*	26*
Northampton	1600-003	59	12	155	152	148	54	42
Springfield	2160-009	59	7	148	145	143	52	43
Springfield	2160-012	59	10	154	150	142	53	44
Springfield	2160-013	54	10	155	152	149	53	44

METROPOLITAN BOSTON AIR QUALITY CONTROL REGION

Beverly	0220-002	83	7	94	73	65	35	32
Boston	0240-018	57	26	165	129	127	78	74
Boston	0240-019	57	14	61	57	57	31	30
Boston	0240-020	59	17	86	67	63	40	38
Boston	0240-021	51	22	104	82	80	51	47
Danvers	0480-003	39**	19	114	82	78	51*	47*
Lynn	1100-003	35**	16	98	96	93	51*	46*
Marblehead	1160-003	23**	13	65	62	58	37*	34*
Salem	1980-004	163	8	98	85	78	32	29
Salem	1980-005	168	3	98	94	84	32	29
Salem	1980-006	159	13	122	97	91	44	40
Sherborn	2042-001	59	3	86	77	54	23	24
Wellesley	2420-001	50	12	58	54	52	30	28

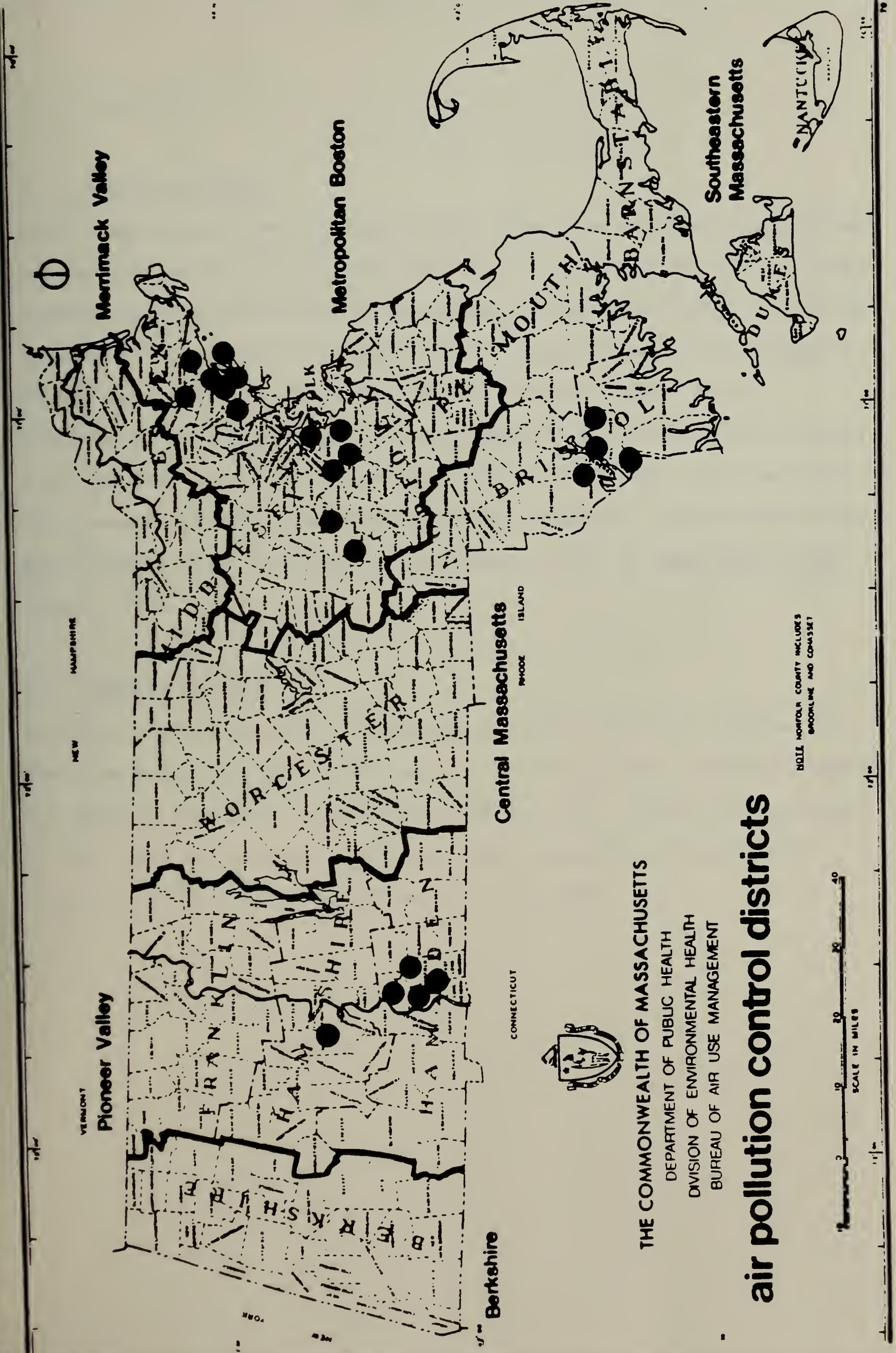
SOUTHEASTERN MASSACHUSETTS AIR QUALITY CONTROL REGION

Fall River	0580-013	59	9	106	90	84	46	42
Fall River	0580-014	56	14	122	108	108	43	39
Fall River	0580-036	56	5	60	59	56	31	28
Swansea	2230-001	55	6	55	52	52	27	25

* Annual Arithmetic Mean and Annual Geometric Mean based on less than 75% data capture.

** When total observations are less than 40, the sample cannot be guaranteed to contain the actual maximum concentration value for the year.

FIGURE 9: Air Sampling Network - Total Suspended Particulates - 1985 - Private Sites



THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
BUREAU OF AIR USE MANAGEMENT

air pollution control districts

F. LEAD (Pb)

1. Sampling Method

Lead measurements are routinely taken using the standard high volume air sampler method every sixth day. In this procedure, air is drawn through a pre-weighed 8"x10" fiberglass particulate filter at a rate between 40 to 60 CFM for a period of 24 hours beginning at midnight. At the conclusion of the sampling, the filter is removed and transported to a laboratory for reweighing. This analysis continues with the filter cut and placed in a nitric acid bath. The solution is then passed through an atomic absorption analyzer. This methodology meets equivalency requirements published by the in Part 50, 40 CFR, July 1, 1981.

2. Summary of Data

In 1985, there were seven state-operated lead monitors (Figure 10). There were no recorded exceedances of the three-month National Ambient Air Quality Standards (NAAQS) for lead in 1985. Table 12 and Figure 10 show that the maximum quarterly level occurred in Springfield (2160-007) with an arithmetic mean of .72 ug/M³.

(3)TABLE 12 - PUBLIC SITES
1985 LEAD MONITORING RESULTS

Pb units: ug/M³

City	Saroad Site #	Instrument Method	No. of Obs.	Maximum Obs.		Arithmetic Mean Quarter			
				1st	2nd	1st	2nd	3rd	4th
<u>CENTRAL MASSACHUSETTS AIR QUALITY CONTROL REGION (118)</u>									
Worcester	2640-016	92	49	.64	.36	.23	.15	.11	.09
<u>MERRIMACK VALLEY AIR QUALITY CONTROL REGION (121)</u>									
Lowell	1080-006	92	52	1.00	.88	.31	.18	.28	.13
<u>METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)</u>									
Boston	0240-002	92	50	.77	.66	.44	.35	.27	.18
Boston	0240-027	92	48	.87	.64	.38	.23	.19	.12
Chelsea	0380-002	92	12	.60	.57	.32	.14	ND	ND
<u>PIONEER VALLEY AIR QUALITY CONTROL REGION (042)</u>									
Springfield	2160-007	92	50	1.40	1.20	.72	.55	.33	.34
Springfield	2160-011	92	50	1.02	.83	.40	.27	.18	.21

ND: No data available

FIGURE 10: Air Sampling Network - Lead - 1985 - Public Sites

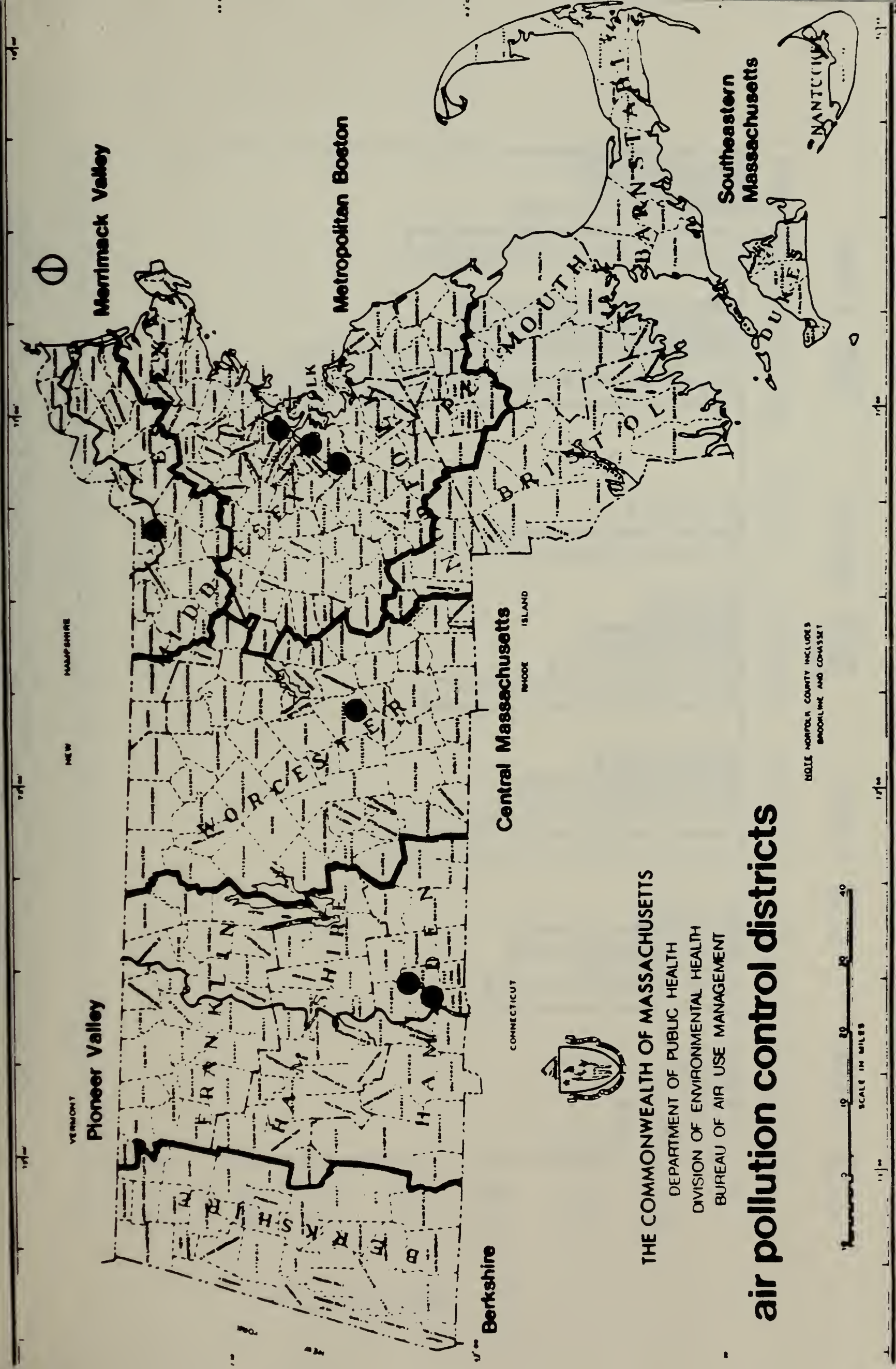
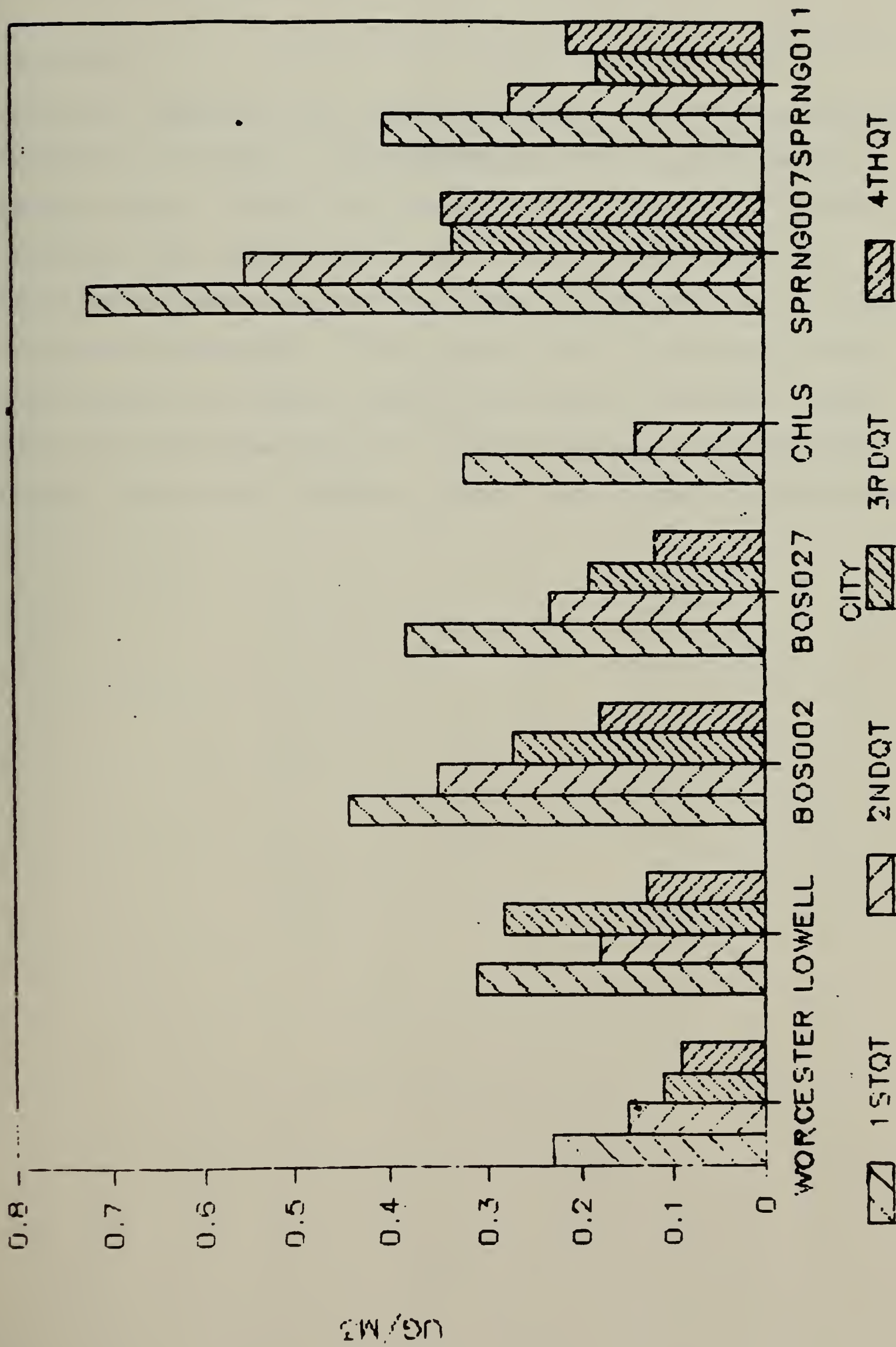


FIGURE 11: QUARTERLY LEAD LEVELS-1985



G. POLLUTANT STANDARD INDEX (PSI)

1. Definition

The Pollutant Standard Index provides a simple, uniform way to report concentrations of ozone -- the predominant form of photochemical oxidants or smog. Through its statewide ozone monitoring network, DAQC evaluates the previous day's ozone level and predicts the following day's ozone concentration based on the analysis, NO_x values and on weather forecasts. A PSI value of 100 is equivalent to the national ambient air quality standard for ozone (.125 ppm). DAQC reports ozone PSI values daily during the months of April through October for three areas: Eastern, Central, and Western Massachusetts.

(2) TABLE 13 PSI Index and General Health Effects

<u>Index Value PSI</u> <u>Descriptor *</u>	<u>General Health Effects</u>	<u>Cautionary Statements</u>
500		
hazardous	Premature death of ill and elderly. Healthy people will experience adverse symptoms that affect their normal activity.	All persons should remain indoors, keeping windows and doors closed. All persons should minimize physical exertion and avoid traffic.
400		
hazardous	Premature onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy persons.	Elderly and persons with existing respiratory diseases should stay indoors and avoid physical exertion. General population should avoid physical activity.
300		
very unhealthful	Significant aggravation of symptoms and decreased exercised tolerance in persons with heart or lung disease with widespread symptoms in the healthy population.	Elderly and persons with existing heart or lung disease should stay indoors and avoid physical activity.
200		
unhealthful	Mild aggravation of symptoms in susceptible persons, with irritation symptoms in the healthy population.	Persons with existing heart or respiratory ailments should reduce physical exertion and outdoor activity.
100		
moderate		
50		
good		
0		

* American Lung Association

TABLE 14 1985 PSI by Region

This table represents the number of days during the ozone season (April-October) that fell into the good, moderate, and unhealthy categories. In 1985, there were no days in the very unhealthy category.

<u>Month</u>	<u>PSI</u>	<u>Eastern Region</u>	<u>Central Region</u>	<u>Western Region</u>
APRIL	Good	14	24	18
	Moderate	16	2	11
	Unhealthful	0	0	1
MAY	Good	10	17	16
	Moderate	19	14	13
	Unhealthful	2	1	2
JUNE	Good	8	19	18
	Moderate	22	11	12
	Unhealthful	0	0	0
JULY	Good	2	9	9
	Moderate	24	20	22
	Unhealthful	5	1	2
AUGUST	Good	6	17	17
	Moderate	22	13	13
	Unhealthful	2	1	2
SEPTEMBER	Good	14	25	24
	Moderate	14	5	6
	Unhealthful	1	0	0
OCTOBER	Good	24	30	29
	Moderate	7	1	2
	Unhealthful	1	0	0
TOTAL	Good	78	141	131
	Moderate	124	66	79
	Unhealthful	11	3	7

H. SULFATES - PRIVATE SITES

1. Sampling Method

Sulfate measurements are taken at private monitoring sites using a standard high volume air sampler. In this procedure, air is drawn through a preweighed, 3"x10" fiberglass particulate filter. The filter is placed in a beaker with 40 milliliters distilled, deionized water. This is covered for 30 minutes and then poured through a Whatman #42 filter into a 200 ml volumetric flask. Approximately 40 milliliters hot distilled, deionized water is added to the beaker, which is covered and left to sonicate for 10 minutes in an ultrasonic bath. The beaker and filter pieces are rinsed two or three times, and the diluent filtered and collected in the flask. At the conclusion of the sampling, the filter is removed and transported to the laboratory for analysis. The analysis involves turbidimetry using a Hach turbidimeter and sulfaver reagent.

2. Summary of Data

There were 10 privately-operated sulfate monitors in 1985 (Figure 12). All sites had at least 75 percent data capture. Table 15 shows that the highest levels were recorded at Sherborn (24 ug/M³, site 2042-001).

(3) TABLE 15 - PRIVATE SITES

1985 SULFATES MONITORING RESULTS

SO₄ Units: ug/M³

City	Saroad Site#	Number of Obs.	Minimum Obs.	Maximum Obs.			Annual Arithmetic Mean
				1st.	2nd.	3rd.	

PIONEER VALLEY AIR QUALITY CONTROL REGION (042)

Chicopee	0400-006	59	3	20	20	18	9
Northampton	1600-003	58	1	17	15	15	8
Springfield	2160-009	59	2	22	19	17	9
Springfield	2160-012	59	2	21	19	17	9
Springfield	2160-013	54	2	22	21	17	8

METROPOLITAN BOSTON AIR QUALITY CONTROL REGION (119)

Boston	0240-018	53	4	23	21	18	10
Boston	0240-019	54	4	22	19	17	9
Boston	0240-020	59	3	22	18	17	9
Boston	0240-021	57	4	22	20	16	9
Sherborn	2042-001	59	0	24	21	15	5

FIGURE 12: Air Sampling Network Sulfates 1985 - Private Sites

